

# W5YI

Nation's Oldest Ham Radio Newsletter

## REPORT

Up to the minute news from the world of amateur radio, personal computing and emerging electronics. While no guarantee is made, information is from sources we believe to be reliable. May be reproduced providing credit is given to The W5YI Report.

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## FCC Reveals New Emergency Alert System

### *Opens Door to Amateur Participation*

#### IF THIS HAD BEEN AN ACTUAL EMERGENCY...

Most Americans have heard of the Emergency Broadcast System (EBS), the system that connects the President and local and state authorities with broadcast stations in emergencies.

EBS' irritating Attention Signal (853 Hz plus 960 Hz) has become, through overuse, the universal "change the station" signal for broadcast listeners and viewers. EBS was the successor to the Cold War-era Conelrad (Control of Electromagnetic Radiation) and the failed, low-frequency Public Emergency Radio system of the 1970s. Both systems were intended to alert the public quickly of enemy attack.

Although it was never actually used for national defense, EBS has been used thousands of times to alert the public in weather emergencies. (FCC Chairman Reed Hundt takes a special interest in weather emergency communications, as his Washington, D.C. home was destroyed and his family almost killed by a powerful storm.)

The FCC announced on December 9 that over the next several years the analog EBS will fade into the sunset. It will be replaced by the high-tech -- and complex -- Emergency Alert System (EAS) in a new Part 11 of FCC Rules. EAS includes a digital alerting format for use by radio, TV and cable TV, NOAA Weather Radio, and other services.

Amateur Radio is not required to use EAS,

but individual amateur stations and repeater stations may wish to install EAS-capable equipment.

The Attention Signal will continue to be used, but it will be shorter (eight seconds) and heard less often in on-air tests. It will be used only to alert humans - not to trigger alerting devices. Those devices (decoders) will react to the short EAS data bursts instead.

New encoders, decoders and receivers of many kinds -- for consumers, broadcast stations and even public places like schools and theaters -- will be manufactured to take advantage of the digital signal. EAS-capable radio and TV receivers are supposed to turn themselves on automatically in emergencies, if consumers program them to do so. EAS involves plans that will be optimized for each geographic area by special committees, in which hams can now play a role.

"For the first time, what we are going to do is allow radio amateurs to serve on our local and state Emergency Communications Committees," according to FCC EAS Chief Dr. Helena Mitchell. "In the field tests and regional and national meetings we have held over the last four years, we had a lot of people tell us that when a disaster happens, amateurs are often the first people on the scene to provide information and assistance. So we made a concerted effort to ensure that they were included. They will be involved at different levels."



"All they have to do is contact us in Washington," Mitchell said. "We will put them in contact with whoever is the state or local chair in their area, and they can start going to the meetings, start participating."

## Understanding EAS

Under the old EBS system, key radio and TV stations -- alerted by the White House or by public safety authorities -- transmit the Attention Signal from tone encoders.

Other stations' receivers detect this signal, alerting on-air operators. Some of the stations then re-transmit the signal in turn, alerting others in a chain-like fashion. Then, designated stations in each area broadcast emergency announcements.

EBS has not always worked. Stations are completely dependent on the station they monitor to activate the EBS system. If the key station fails to activate, other stations may not learn of the emergency. The system depends completely on human involvement -- introducing delays. Also, EBS cannot easily tailor emergency messages to specific areas such as counties that may be affected.

In the new EAS, stations will still monitor other stations and networks in a prearranged system. However, key stations will transmit EAS signals, which include detailed codes identifying the type and source of message. All EAS participants will use decoders that monitor more than one input -- such as radio stations, TV stations, NOAA Weather Radio, telephone lines -- to increase reliability. Decoders will contain digital voice storage to record emergency announcements and play them back.

EAS decoders, and EAS-equipped radio and TV sets and Weather Radios, can be programmed to respond to emergency messages of particular kinds. A Presidential national-level emergency -- called the Emergency Action Notification (EAN) -- can cause a broadcaster's decoder to commandeer the main program immediately without human intervention.

In a movie theater, the decoder could stop a projector, turn on lights and flash messages. Decoders used by cable TV systems will trigger video interrupt and audio messages on all channels and direct viewers to switch to a special channel for more information.

## EAS Message Protocol

Much of the EAS technology is derived from one used by NOAA Weather Radio. In the FCC's words:

"The EAS message consists of a digital header, an attention signal, an audio or text message and an End Of Message (EOM) code. The digital codes use audio frequency shift keying tones similar to the National Weather Radio WRSAME [Specific Area Message Encoder] system. The digital codes and protocol

will be used to activate the EAS for national messages and state or local emergencies.

"Because the codes are predefined, anyone receiving them can quickly determine their meaning. The codes define who originated the emergency message, the nature of the emergency, the location of the emergency, and the valid time period of the emergency.

"Also, the codes are within the audio bandpass of radio and television receivers and, therefore, are immediately available to the public. The codes have a unique transmission rate, which provides a measure of security because off-the-shelf equipment cannot be used to replicate the codes. This aids in identifying equipment that may have been used to transmit the codes illegally. Also, the code structure is very short and contains just three or four key elements. This enables EAS message originators to quickly develop warning messages for injection into the communications system."

The EAS location code can be for events affecting a whole state, a county, or a portion as small as 1/9th of a county. There can be codes for alerting specific schools, hospitals, neighborhoods, a block within a neighborhood, or even individual homes! The FCC and National Weather Service will keep records of all codes in use.

The FCC added that EAS codes have been tested on main carriers and subcarriers of broadcast stations; microwave links; phone circuits; HF, VHF and UHF radio and satellites, and on skip, multipath, co-channel interference and weak-signal paths.

EAS data transmission uses 7-bit ASCII characters, sent by AFSK at 520.83 bits per second. The Mark frequency is 2083.3 Hz and the Space frequency is 1562.5 Hz. Mark and Space time are 1.92 ms. Minus and plus signs are used to separate parts of the message.

## Structure of EAS Message

1. The EAS Header is sent three times with a one-second pause in between each repetition. (See "Contents of Header" below).
2. Next is transmitted 8 to 25 seconds of the Attention Signal. We think most stations will limit it to 8 seconds, especially when testing.
3. Next comes the actual emergency announcement, which may be in audio, video or text form.
4. This is followed by the End of Message code: NNNN repeated three times.

## Contents of Header

The Header is [PREAMBLE] ZCZC-ORG-EEE-PSSSC-CC+TTTT-JJHHMMM-LLLLLLLLL-  
PREAMBLE- This is a string of bits (16 bits of AB



hexadecimal, an 8 bit byte 10101011) sent to clear the system, set AGC and set asynchronous decoder clocking cycles.

ZCZC- This identifier indicates the start of ASCII code.

ORG- This Originator Code indicates who originally activated the EAS.

Only five originator codes are allowed: EAN (White House, connected to major networks and wire services); PEP (Primary Entry Point System, an alternative system available to the President, consisting of radio stations in geographic "safe zones" less likely to be hit in attacks); WXR (National Weather Service); CIV (Civil authorities); EAS (Broadcast station or cable TV system).

EEE- This Event Code shows the nature of the emergency. There are currently 32 of these codes. A few are: EAN (National Emergency); EAT (Termination of National Emergency); TOR (Tornado Warning); SPS (Special Weather Statement); EVI (Evacuation Immediate); DMO (Demo Warning for practice).

PSSCCC- This is the Location Code for the area affected by the alert. P defines county subdivisions (for example, 0 for all of a county; 9 for southeast). SS defines a state by a numbered list (such as 48 for Texas). Each county is assigned a CCC number. A CCC of 000 refers to an entire state. There may be 31 Location Codes in an EAS alert.

+TTTT- This indicates the valid time period of a message in 15 minute segments up to one hour and then in 30 minute segments beyond one hour (such as +0030).

JJJHHMMM- This is the day in Julian Calendar days (JJJ) of the year and the time in hours and minutes (HHMM) when the message was first released by the originator, using 24 hour Universal Coordinated Time. Anyone who retransmits the message must not change these codes.

LLLLLLLL- This is the callsign or other ID of the broadcast station, or National Weather Service office transmitting or retransmitting the message. The EAS encoder will automatically affix this code to outgoing messages that it sends.

## How to Tune In

The FCC is optimistic that radio and TV manufacturers will build sets that incorporate EAS decoders. We aren't so sure, especially since programming the decoder to turn on the set automatically may be rather complicated.

Fortunately, as long as you happen to be watching TV or listening to the radio at the time, you should hear the emergency bulletin. Some stations will transmit the emergency information and then go off the air while others must stay on the air. If you are asleep or not tuned in you may be out of luck. (FCC Chairman

Hundt's family was not using TV or radio at the time of the storm. They scrambled to the basement moments before their house was leveled.)

Increasingly, FM radio receivers will be available with RDS (Radio Data System), a subcarrier digital service that can turn the radio on if the broadcaster sends a special code. This would not be your radio responding to EAS data on the main audio channel, but to the broadcaster's RDS signal sent over a subcarrier.

If you want to be absolutely sure of receiving EAS alerts day or night, good old NOAA Weather Radio could be the best choice. NOAA Weather Radio broadcasts weather information continuously in the VHF band from hundreds of stations. You can receive it on any scanner or on special receivers sold by Radio Shack and other vendors.

New Weather Radios are being marketed that incorporate EAS/WRSAME capability -- some were displayed at the FCC. They will automatically de-mute when the codes are received. NOAA is moving as quickly as possible to install EAS/WRSAME encoders in all of its stations.

NOAA Weather Radio frequencies (in MHz.):  
162.400, 162.425, 162.450, 162.475, 162.500, 162.525, 162.550.

## FCC 2400 MHZ REALLOCATION

### *Commenters Debate New Uses to be Introduced*

The FCC is preparing to reallocate spectrum in the 2390-2400, 2402-2417 and 4660-4685 MHz bands - but it has not decided which use or service will receive the bands. As dictated by Budget Reconciliation legislation, the National Telecommunications and Information Administration (NTIA) made those and will make other bands available to the FCC for reallocation to new commercial and/or institutional uses.

Proposed uses include low-power data Personal Communications Service devices ("Data-PCS"), aircraft audio-visual entertainment service (AAVS), wireless local telephone service and others. The fur is flying in ET Docket No. 94-32, where spectrum users and would-be users are debating how the spectrum should be allocated - and especially, whether 2.4 GHz Amateur Radio operations can survive interference when new uses begin. Here are excerpts from comments just in:

- "It must be absolutely understood...that NTIA has not complied with the Reconciliation Act... NTIA did not appropriately consider the uses made by the Amateur Service of the 2390-2400 MHz, or 2402-2417 MHz bands. Its conclusion that the needs of the Amateur Service can be adequately met in the 2400-2402 and 2417-2450 MHz bands was baseless and incorrect. Nor was the required study of amateur and



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commercial service sharing compatibility ever conducted by NTIA.

"The Commission cannot, consistent with the Reconciliation Act, reduce the allocation for amateurs at 2.4 GHz in implementing NTIA's final reallocations. Nor can it diminish the availability of the frequencies by adding inconsistent nongovernment sharing partners. The Amateur Service has, in the past ten years, seen the deletion of the amateur allocation at 2310-2390 MHz, a loss of fully 80 MHz of spectrum (which is not at all usefully deployed for aeronautical flight test telemetry).

"It has also seen the reallocation of 220-222 MHz, 420-430 MHz in certain areas of the country, and currently is being threatened with a de facto loss of utility of the 902-928 MHz band, through the imprudent addition of incompatible uses there. The same is true of the 449 MHz band in certain areas. The constant winnowing of amateur VHF and UHF allocations in recent years has resulted in a steady migration of specialized amateur uses, to the bands above 928 MHz. For the Commission to delete, or render less useful, any portion of the 2.4 GHz allocation would be unconscionable, given its past allocation decisions." - **American Radio Relay League**

• "The frequencies addressed in this matter should be awarded to those who have interests that benefit the public welfare and not the bulging bank accounts of bidders and lobbyists. The County has one simple request. Award the 50 MHz of spectrum as discussed in this proceeding to Fire and Sheriff aeronautical emergency operations." - **County of Los Angeles**

• "...Regulatory impediments to date have hindered utilization of the 2390-2417 MHz frequency band by Radio Amateurs for experimentation in digital networking technology. ...Current assumptions of low use of this band by Radio Amateurs are more a gauge of the effectiveness of over-government in depressing spectrum use than they are estimates of the potential for spectrum use by Radio Amateurs." - **Northern California Packet Association**

• "Notwithstanding the fact that the noise contained in the 2390-2400 MHz band will extract some costs in terms of additional infrastructure, Motorola recommends that the Commission pair this band with the 2300-2310 MHz band and allocate it for advanced private land mobile communications." - **Motorola Inc.**

• "Given the limited number of amateur users of the 2390-2400 MHz band and the directional, point-to-point nature of amateur transmissions, the probability of interference to the reception of AAVS signals on board aircraft from amateur operations is believed to be small. The potential for interference from ARS to AAVS

will not increase as long as the mode of amateur transmissions in the 2390-2400 MHz band continues to be terrestrial point-to-point using low-power transmitters and high gain, narrow-beamwidth antennas." - **In-Flight Phone Corporation**

• "The National Astronomy and Ionospheric Center (NAIC, Arecibo, PR) performs important planetary research at 2380 MHz using the world's largest radio/radar telescope. Research from this facility has resulted in major contributions to knowledge of the solar system...

"The NAIC facility also is one of the few sites in the world available to use radar to watch for near-Earth objects. These objects, if they collide with the Earth, could prove devastating to safety and even civilization itself. Without the proper protections, the reallocation of the 2390-2400 and 2402-2417 MHz bands poses a substantial threat to the effectiveness of the NAIC facilities." - **National Research Council**

• "The NTIA may have simply looked at the ARRL Repeater Directory, noted the few number of listings in the 2.3 GHz band and concluded there was little or no activity there, with a few exceptions in major cities. However, starting at page 61 of the current directory is a listing of nearly 100 frequency coordinators.

"Had the NTIA contacted some of them, their conclusion the bands were "sparsely used" would not have been made. Then, having come to the logical conclusion that excessive disruption of our services would take place by adding new users, they could have then attempted to carry out the second part of their mandated task: to identify replacement spectrum." - **Northern Amateur Relay Council of California**

• "An indispensable condition to the initiation of Data-PCS service is that it be permitted to operate in spectrum which is easily cleared or entirely clear. These devices are truly nomadic, designed to permit users access to information wherever they may be - at home, at work, in a classroom, a library or on travel. As a result, Data-PCS devices are marketable only if the spectrum allocated for the use is clear on a nationwide basis.

"The spectrum at 2390-2400 MHz meets this criterion. Although the spectrum is presently allocated on a secondary basis for certain specialized amateur radio use, the record confirms that the existing use is extremely light and that these specialized amateur uses-if they further develop--can be accommodated elsewhere in the 2400-2500 MHz portion of the band. Thus, Data-PCS can be permitted exclusive use of this spectrum without "excessive disruption" of "existing use" in the amateur service, as the Reconciliation Act stipulates." - **Compaq Computer Corporation**



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• "The FCC has also proposed reallocation of the 2390 to 2400 MHz band segment to the private sector. This band is presently allocated on a secondary basis to the Amateur service. Because this band has similar noise characteristics to the 2.4 GHz band, we do not see how this band can be used for commercial services... Instead, we urge that this band segment be retained for use by the Amateur Service but additionally be opened to the use of low power unlicensed devices intended for short range communication.

"IBM notes that it "designed the IBM Wireless LAN with special design attributes that....allow it to operate without substantial interference from the amateur radio operators and other ISM equipment currently operating in the 2400 MHz band." The Amateur Radio service has a long history of successfully sharing spectrum with other users, especially Part 15 users. Therefore, we recommend that the segment 2390 to 2400 MHz be added to those bands suited for Part 15 devices and that the Amateur service be retained in this band segment." - *Microsoft Corporation*

• "If the Commission has decided that the 2390-2400 MHz band is to be shared with another service, the most compatible sharing partner would be the low-power Part 15 Data-PCS. The scales will be tipped in favor of the amateur operator, who is allowed transmitters up to 1500 watts and there are no restrictions on locations or characteristics of antennas. By contrast, the rules adopted for asynchronous unlicensed Data-PCS, limit emissions to well under a watt. Additionally, the spectrum etiquette imposed on the Data-PCS device requires a modified "listen before talk" deferral to a band occupant. Representatives of the amateur service and Data-PCS providers should also seek an informal "band plan" that would further minimize interference conditions. ...

"To allay the fears of the amateur community, to provide for further amateur activities, and to forestall repetition of the current process whereby many parties contend for the amateur spectrum, the Commission should make a package of coordinated decisions now, including:

1. Retain the present allocation of the entire 2390-2450 MHz band to the amateur service, affirming that no primary services will be licensed, auctioned or otherwise, in the 2400-2483.5 MHz band;
2. Increase that allocation to extend over the balance of the Part 15 band at 2450-2483.5 MHz, with the full understanding by all parties that this increased allocation is only applicable domestically and thus is not suitable for satellite-based systems;
3. ...Allocate the 2390-2400 MHz band to the "most compatible sharing partner" among the band contenders, which would clearly be low power Part

15 Data-PCS services, secondary to the amateur service, and;

4. Declare that the 2300-2310 MHz band will maintain an amateur-exclusive status and will not be considered for reallocation after the band is released by the Federal Government." - *Apple Computer, Inc.*

## 1994 - THE AMATEUR RADIO YEAR IN REVIEW

Every year about this time we pause to reflect on what has happened during the prior year and to look ahead to what may be in store. The year started off with:

### FCC PROPOSES "VANITY" STATION CALL SIGNS

This was our lead story exactly a year ago! And it turned out to be the year's most closely watched proceeding. Thousands of amateur radio operators, it seems, want to get a personalized call sign. PR Docket 97-305 was released Dec. 29, 1993. The comment and reply period closed on April 7, 1994. While the FCC went as far as to say that "Vanity" call signs could be available as early as summer, the measure still has not been acted on by the Commissioners.

The NPRM provided that individual ham operators could apply for a specific available call sign which is appropriate for their license class by completing a new FCC Form 610-V to select up to ten call signs in order of preference. Club stations (but not RACES or military stations) would also be able to choose specific call letters.

The cost of a special call sign was established by Congress at \$70 for a ten year term. Amateurs holding vanity call signs who upgrade or otherwise modify their license would not be granted a new full ten year term. Instead, their new license would bear the original expiration date.

All licensees will only have one station call sign. Their previous call sign would be immediately available for reassignment.

All amateurs would be initially assigned a sequential call sign which could be changed if the licensee wished. The FCC said the details of how the new "vanity" call sign system would work would be detailed in a public announcements that they would issue.

The FCC did not propose to assign personalized call signs on a prioritized basis. As a general rule, public comments generally supported that some sort of priority system be adopted in assigning personalized call signs.

The "vanity" call sign program was made possible in part by the installation of a new amateur service data processing system at the Gettysburg, Penna., licensing facility. This new system also will make the



automated filing of amateur radio applications and quicker licensing a reality.

## ARRL ASKS FOR LIFETIME OPERATOR LICENSE

On Jan. 6, 1994 the League petitioned the FCC to make the operator portion of an amateur radio station/operator license valid for life. The rationale was that this would prevent an inactive licensee from having to be retested if the station portion of his or her license lapsed.

It was noted that the FCC currently issues the commercial General Radiotelephone Operator License for the lifetime of the recipient. The ARRL's proposal, if adopted, would extend current amateur operator licenses from ten years to a lifetime term. The petition also appears to request that licenses which expired up to two years before the effective date of the new rules should be determined to also be extended for the lifetime of the operator.

## BIOLOGICAL EFFECTS AND POTENTIAL HAZARDS OF RADIO FREQUENCY RADIATION

The public comment period on the FCC's proposed revision of RF safety standards closed on Feb. 24th. The FCC wants to replace the old ANSI C95.1-1982 RF safety guideline with a new and much stricter ANSI C95.1-1992 standard.

The new guidelines for radio frequency radiation safety are those recommended by the *American National Standards Institute* (ANSI) and the *Institute of Electrical and Electronic Engineers* (IEEE.) The FCC endorsed the tighter safety standards due to a growing body of medical evidence that under some circumstances, the proximity of electromagnetic fields in the environment may pose certain health hazards.

The FCC also wants to eliminate the categorical RF safety exemption for radio amateurs. This could result in ham operators having to prove that their transmissions do not expose anyone to RF radiation in excess of the 1992 ANSI safety guidelines. The FCC did not explain how amateurs would be expected to prove that they meet the new RF safety standard.

The new guidelines address RF protection under two threatening scenarios.

1. "Controlled" situations are places where the public is fully aware of the RF fields (this is commonly thought of as the standard for voluntary occupational exposure), and;
2. "Uncontrolled" instances -- the much stricter standard when the general public is unaware of the RF exposure.

If the new rules are adopted, amateurs could incur high costs because the cost of RF measuring devices are expensive. Furthermore, the new rules could force curtailment of certain amateur radio activities in residential neighborhoods.

Another controversial issue concerns hand-held transceivers. All transmitters with less than seven watts of output power were categorically exempt under the old RF safety standards. The new standard reduces the exemption to 1.4 watts for exposure to persons not aware of the RF fields.

This important proceeding could lead to radio amateurs having to take steps to minimize public exposure to RF energy. It could also encourage new restrictions on amateur antennas by local governments, homeowners associations and other rulemaking authorities.

Interestingly, the ARRL's blue ribbon *Committee on Biological Effects of RF Energy* not only advised the League of their recommendations, they also submitted comments on their own behalf. The Committee, made up of nationally recognized RF experts, were summarily fired by the League's Board of Directors.

## HAM RADIO FLIES ON SPACE SHUTTLE

School children talked to astronauts aboard the STS-60 Shuttle Discovery (in February), the STS-59 Shuttle Endeavour (in April) and Discovery again (STS-64) in September. The ham astronauts also chatted with radio amateurs around the world and logged hundreds of automated packet radio contacts.

NASA's goal in making astronauts available for the SAREX (Shuttle Amateur Radio EXperiment) program is to involve the largest possible numbers of people, particularly youngsters, in technology and the U.S. space program with the help of amateur radio.

## MASSIVE SPECTRUM SHIFT TO PRIVATE SECTOR

A new law requiring the government to turn over some of their radio spectrum to commercial use has resulted in a proposal by the FCC to reallocate part of the amateur 13 cm band. Congress authorized the 200 MHz (below 5 GHz) spectrum reallocation in the same 1993 budget bill that created spectrum auctions.

Among the frequencies the NTIA (National Telecommunications and Information Administration) wants to reallocate are the 2390 to 2400 MHz and 2402-2427 MHz bands which is shared by the amateur service. The NTIA believes these bands are very lightly used by radio amateurs. AMSAT says they needed these bands for upcoming AMSAT-OSCAR satellites.

## FCC PROPOSES, IMPLEMENTS REGULATORY FEES

Showing how fast the FCC can operate if they really want to, the Commission proposed in March to activate "Regulatory Fees" which would be payable to the U.S. treasury by most radio licensees ...that is, except for emergency, public safety and amateur radio operators. The proceeding went through the comment period in an unbelievably fast 30 days and was implemented in July.

A regulatory fee reimburses the government for



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costs incurred in providing radio service enforcement, rule making, user information services and various international activities. It is one of the fees charged to users of the radio spectrum. This idea is to make beneficiaries of government services (rather than all taxpayers) pay for the services they receive. It is part of the Clinton program of "reinventing government."

The regulatory fee for a commercial radio operator license (and amateur service "vanity" call signs) is based on \$35.00 per year. Strangely, the FCC was unable to implement regulatory fees on the (commercial) *General Radiotelephone Operator License* since it is a lifetime license and Congress never told the FCC how many years a lifetime constitutes!

The end result is that there is no regulatory fee on the lifetime term GROL (or the *Restricted Radiotelephone Operator Permit*) until Congress comes up with more definitions. The FCC staff wanted to declare that a lifetime constituted 15 years (or \$105 which is 15 times \$7.00) but the FCC Commissioners said they had no authority to make that decision. So until further legislation is adopted by Congress, the GROL carries no regulatory fee!

The FCC also upped their Application Fee on certain radio licenses from \$35.00 to \$45.00. An application fee reimburses the government for costs associated with the processing of applications and the collection of fees.

## PACKET MESSAGE FORWARDING RULES AMENDED

The FCC relaxed the packet radio message forwarding rules effective June 1st while retaining safeguards to prevent misuse.

The new rules hold the message originator primarily accountable for the content of messages flowing through his/her packet radio station. The FCC also requires that the originators of messages posted for transmission (such as to a "bulletin board") by amateur stations to (but not yet entered in) the packet network must be known to the licensee of the first forwarding station ...otherwise the licensee entering the traffic into the network must accept responsibility for its content.

The objective of the new rules is to eliminate the necessity of having every packet station along a message route review message content before approving its transfer through his or her station. Control operators of forwarding stations that unknowingly retransmit communications that violate the rules are not responsible for message content violations.

## INTERNATIONAL AMATEUR RADIO LICENSING

In June, the FCC began consideration of a plan that could lead to international licensing of ham radio operators. The *Conference of European Postal and Telecommunications Administrations* (CEPT) consists of about 40 European nations that recognize each other's

amateur radio license. There is also a provision for countries outside of Europe to join that agreement and the United States is looking into it.

The CEPT countries only recognize two classes of ham licenses. Class 2 is a VHF and higher frequency no-code license and, Class 1; an all-band ticket requiring telegraphy knowledge. Each CEPT member determines how their licenses convert to these two classes.

The FCC is also working on an international amateur operating permit for the Americas ..North, Central and South America. It would be similar to an international automobile driver's license.

## RADIO SHACK WANTS NEW FAMILY RADIO SERVICE

On July 20, Tandy/Radio Shack formally petitioned the FCC to establish an unlicensed UHF-FM Family Radio Service (FRS). The new 500 mW narrowband personal radio service would operate on 2 repeater and 14 simplex channels on 460 MHz spectrum allocated to the General Mobile Radio Service. Tandy has already tested FRS under an FCC-issued STA (Special Temporary Authority.)

The FCC accepted Radio Shack's proposal as having merit and assigned it File No. RM-8499. Present GMRS users oppose the new service but the big name equipment makers (such as Motorola, Uniden and, of course, Tandy/Radio Shack) are in favor.

Ironically, FRS is almost exactly as proposed by FCC Commissioner E. K. Jett a half a century ago! On page 16 of the July 28, 1945 issue of the *Saturday Evening Post* (in an article entitled "*Phone Me By Air*," Jett tells about:

1. "...rapid strides in opening up frequencies above 300,000 kilocycles." (300 MHz)
2. "...the 460 to 470 kilocycle band is expected to furnish enough room for millions of users."
3. "...high buildings and high terrain will obstruct a transmission path... this will be corrected by the installation of relay transmitters at various locations which will automatically pick up and spread them..." (repeaters)
4. "...the handi-talkies will reach one to two miles. The short range will be due partly to the low power that will be employed, with as little as one half watt..."
5. "...engineers will have to do some experimenting to produce tubes and circuits to fit the frequencies in the 460,000 kilocycle band."
6. "...handi-talkies probably will retail for approximately \$50. One large manufacturer expects the cost to be somewhat below that figure."
7. "The applicant probably will go to one of the commission's field offices and obtain his operator's license by merely certifying that he has read and understands the FCC's brief regulations...." (licensing requirements would be negligible)
8. "The license will not grant the right to any specified frequencies. They will merely confer the privilege of sharing in the use..."



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9. "...each channel will be sort of a party line..."
10. "...no charge will be made for the transmissions... the service must not be used for broadcasting to the general public."
11. "Manufacturers say these sets may sell at the rate of hundreds of thousands and, eventually, as prices are brought down or their popularity grows, even millions a year."

These are all verbatim quotes from 50 years ago, before transistors, before UHF radio use and before CB radio. Actually the Citizens Radio Service ended up at 27 MHz because equipment makers were unable to produce radios as inexpensive as Jett had predicted. Now, of course, they can. Commissioner Jett was simply 50 years ahead of his time. Now Radio Shack wants to implement the service he envisioned in 1945.

## FCC CONDUCTS MASSIVE SPECTRUM AUCTIONS

Instead of simply allocating the radio airwaves to users free of cost, the FCC in 1994 began selling it to the highest bidder for the first time! *Personal Communication Services* and "PCS" became the buzzword of the future as businessmen began accumulating licenses for radio channels they will resell to the public in the form of new telecommunications capability.

In July the FCC auctioned off a batch of narrow-band PCS licenses that promise to unleash a wide array of sophisticated paging, messaging, video, data and facsimile services. The broadband PCS spectrum auction began last month. Those frequencies will primarily be used to provide low priced cellular communications to people carrying pocket telephones.

Predictions are that the PCS auctions will fatten the U.S. treasury by some \$5 to \$15 billion as thousands of narrow and broadband licenses are sold.

## ELECTRONIC FILING OF AMATEUR APPLICATIONS

The FCC developed software to be used by the volunteer examining community to electronically input FCC Form 610 amateur radio applications into their licensing computer at Gettysburg, Penna. Testing of electronic application filing got underway in September and at year end was ready to be implemented.

The law that previously required FCC review of an original handwritten signature on the application was changed. The Commission can now receive data by electronic means and grant a "paperless" amateur radio license. All amateur service licensees will still, of course, receive a "hard copy" license.

Effective December 20th new amateurs may go on the air once their licensing data appears in the FCC data base. The rule requiring that a licensee have a paper license document in his/her possession when operating on the amateur airwaves has been dropped.

Transmission of the application data from the VEC System to the FCC will be facilitated by electronic mail and the Internet. The ultimate goal of the elec-

tronic filing program is for FCC Form 610 data to be transmitted from the various VEC Offices daily, processed at night ...with a call sign being available in the FCC's computer shortly thereafter. It could happen as early as the following morning!

Once electronic filing is implemented, licensees will be able to get their new call sign simply by calling the FCC's toll-free: 1-800-322-1117 consumer assistance line between 8:30 a.m. and 4:30 p.m. (Eastern time) Monday through Friday. This is a new procedure and the FCC wants callers to be patient. They advise it might take time to access this number if many people are calling for new amateur call signs at the same time. Eventually the plan is to post all license grants and call signs to some sort of publicly available online service. This should be in place by the end of 1995.

The FCC is currently considering RM-8288, a temporary operating proposal from the Western Carolina Amateur Radio Society VEC of Knoxville, TN. WCARS-VEC suggests a self-issued callsign from the WZ prefix block followed by an area number and the new amateur's three initials could be used on the amateur air waves until such time as a license is received. This procedure may not be needed in view of electronic application filing.

## MONUMENTAL STAFF SHAKEUP AT THE FCC

On August 1st, FCC Chairman Reed E. Hundt announced massive organizational changes at the Federal Communications Commission.

The Private Radio Bureau was discontinued and absorbed into a new Wireless Telecommunications Bureau. That office will license and administer all personal communication services, domestic radio, land mobile, aviation and marine services ...and oversee the commercial radio operator program.

The new bureau chief is Regina Keeney. She comes to the FCC from the Senate Committee on Commerce, Science and Transportation where she served as minority counsel. Ralph A. Haller and Gerald P. Vaughan both become Deputy Chiefs.

Amateur radio will fall under the Private Radio Division which was previously called the Special Services Division. And they have a new telephone number: (202) 418-0680.

The FCC also created a new International Bureau to deal with international policy, treaties and satellite telecommunications. There were top level personnel changes in several of the other bureaus as well.

## OTHER PROPOSALS UNDER CONSIDERATION

Last June, the FCC proposed to permit unattended digital communications on certain segments of the HF bands. The FCC is also considering the sharing of spectrum at 219 to 220 MHz with the amateur service.



## TWO AMATEURS SURRENDER LICENSES IN EXAM FRAUD CASE - ANOTHER AGREES TO SETTLEMENT

Amateur Extra Class licensees Robert L. Flores N6WPQ, 31, and Rose Marie Flores, N6WPR, 45, both of Santa Monica, California, have surrendered their licenses for cancellation following the initiation of license revocation and suspension proceedings in an examination fraud case. The third amateur involved in the case, Amateur Extra Class licensee James B. Williams, AA6TC, 74, of Wilmington, California, has agreed to a settlement.

The Private Radio Bureau (now the Wireless Telecommunications Bureau) started license revocation proceedings against respondents J. B. Williams, Rose Marie Flores, and Robert L. Flores by an *Order to Show Cause and Suspension Order* released September 27, 1994.

The *Order* asserted that the respondents and a fourth person were volunteer examiners (VEs) at an amateur operator license examination session held at the Carol Little Company in Los Angeles, California, on August 15, 1993.

It was undisputed that they administered examinations at that session to seven members of a class that had been held for company employees. The VEs report indicated that they examined fifteen additional persons, ten of whom passed examination elements. The respondent VEs claimed that there was a "second" examination sitting following the testing of the Company employees.

Information available to the Commission, however, indicated that the respondent VEs did not examine any additional persons and that there was no "second sitting." Specifically, the *Order* alleged that the respondent VEs willfully signed VE certifications and *Certificates of Successful Completion of Examination* (CSCE) indicating that persons who were not examined at the Company session had passed the examination elements required for amateur operator licenses at that session.

The *Order* alleged further that the respondent VEs assisted other persons to obtain amateur operator licenses by fraudulent means and that the respondent VEs misrepresented material facts to the Commission.

Williams' was represented by counsel. His negotiated settlement with the Bureau provided for a one year suspension of his amateur operator license and a voluntary \$500 contribution to the United States Treasury. Williams admitted that there was no second sitting at the August 15th examination session and that the applicants purportedly tested at that sitting were not examined.

Williams agreed to fully cooperate with the Bureau's investigation of possible fraudulent amateur operator license examinations. If Williams does not

cooperate fully, his amateur station license could be revoked and his amateur operator license could be suspended for the remainder of its term.

The Commission has cancelled the amateur radio station and operator licenses of Robert L. Flores, N6WPQ and Rose Marie Flores, N6WPR. The license applications of the ten persons who were not examined but were reported to have passed examination elements have been dismissed without action.

(Adapted from FCC News Bulletin, Dated: Dec. 16, 1994)

## AMATEUR RADIO CALL SIGNS

...issued as of the first of December 1994:

| Radio District | Gp.*A<br><u>Extra</u> | Gp.*B<br><u>Advan.</u> | Gp.*C<br><u>Tech/Gen</u> | Gp.*D<br><u>Novice</u> |
|----------------|-----------------------|------------------------|--------------------------|------------------------|
| 0 (*)          | AA0UN                 | KG0RV                  | (***)                    | KB0PTK                 |
| 1 (*)          | AA1LM                 | KD1YE                  | N1TQD                    | KB1BLO                 |
| 2 (*)          | AA2UX                 | KF2ZD                  | (***)                    | KB2SOZ                 |
| 3 (*)          | AA3JD                 | KE3QE                  | (***)                    | KB3BFO                 |
| 4 (*)          | AE4AD                 | KS4IM                  | (***)                    | KE4TEA                 |
| 5 (*)          | AB5ZA                 | KK5FX                  | (***)                    | KC5LCE                 |
| 6 (*)          | AC6LA                 | KO6MH                  | (***)                    | KE6ONG                 |
| 7 (*)          | AB7GH                 | KJ7FZ                  | (***)                    | KC7GZS                 |
| 8 (*)          | AA8RE                 | KG8NH                  | (***)                    | KB8VTG                 |
| 9 (*)          | AA9NE                 | KF9ZB                  | N9ZHC                    | KB9JBM                 |
| N.Mariana Is.  | KH0O                  | AH0AN                  | KH0DO                    | WH0AAX                 |
| Guam           | WH2I                  | AH2CZ                  | KH2LP                    | WH2ANG                 |
| Johnston Is.   | AH3D                  | AH3AD                  | KH3AG                    | WH3AAG                 |
| Midway Is.     |                       | AH4AA                  | KH4AG                    | WH4AAH                 |
| Hawaii         | (**)                  | AH6NQ                  | WH6ZP                    | WH6CRM                 |
| Kure Is.       |                       |                        | KH7AA                    |                        |
| Amer. Samoa    | AH8L                  | AH8AG                  | KH8BJ                    | WH8ABB                 |
| Wake W.Peale   | AH9C                  | AH9AD                  | KH9AE                    | WH9AAI                 |
| Alaska         | (**)                  | AL7PV                  | WL7ZA                    | WL7CHW                 |
| Virgin Is.     | WP2P                  | KP2CD                  | NP2HS                    | WP2AHV                 |
| Puerto Rico    | (**)                  | KP4XY                  | (***)                    | WP4MUL                 |

\*=All 2-by-1 "W" prefixed call signs assigned.

\*\*=All Group A (2-by-1) format call signs have been assigned in Hawaii, Alaska and Puerto Rico.

\*\*\*=Group "C" (1-by-3) call signs assigned in all radio districts except the 1st, 3rd and 9th call areas.

[Source: FCC, Gettysburg, Pennsylvania]

## THE "INTEL INSIDE - DON'T DIVIDE" CHIPWRECK

*Intel reverses position after month of bad publicity*

Thanks to mostly unfounded mass hysteria, the "Intel Inside - Pentium" label degenerated into a warning rather than a sign of quality. It will now cost Intel an estimated \$1 billion to replace 4 to 5 million Pentium chips now in PCs.

Rather than being managed by shrewd marketers, Intel is driven by bright (but not smart) engineers. They simply did not anticipate that a bug in their Pentium processor would be characterized as a major defect. Intel even went so far as to say the technical



problem was so small that they planned to continue making the flawed chip while it phases in a modified model. The news of the flaw and Intel's poor handling spread like wildfire on the Internet ...spilling over into the major print and broadcast media.

To restore confidence, outsiders called for a total recall much like Johnson & Johnson did a decade ago during the Tylenol scare. Instead, Intel responded to reality rather than good customer relations. They established a phone bank and set out to replace chips for those limited users doing critical calculations. People calling for information or replacements were given the third degree aimed at not replacing the chip. Users quickly questioned Intel's support of its \$80 million "Intel Inside" quality assurance campaign.

The Food & Drug Administration announced it was looking into whether the chip may have led to inaccurate data supplied by pharmaceutical manufacturers seeking approval for drugs. Some errors were reported on database and application servers. Every crash or problem was blamed on the Pentium.

Even ham operators running AMSAT's satellite-tracking "InstantTrack" on Pentium equipped PCs reported problems on the map graphics screen. They said the text printing at the bottom was gibberish. Was "The Pentium Flaw" responsible?

The last straw came when IBM halted shipments of Pentium-based PCs. Some industry observers believe IBM was really out to obtain a marketing advantage for their PowerPC, a Pentium competitor. The Prodigy consumer online service (which is owned by IBM) also took heavy shots at Intel.

The nation's largest seller of PCs, Compaq Computer Corp., however, continued to ship Pentium PCs. Some buyers were reluctant to buy a PC with a known bug when they could buy a good one in a few months.

The inevitable came on December 20th. In an effort to improve their image, Intel now says it will replace all Pentium chips. Here is their press release:

Santa Clara, Calif., Dec. 20, 1994 -- Intel today said it will exchange the processor for any owner of a Pentium processor-based system who is concerned about the subtle flaw in the floating point unit of the processor. The company has been criticized in recent weeks for replacing processors on the basis of need rather than on request. Intel will take a reserve against fourth quarter earnings to cover costs associated with the replacement program.

The flaw can produce reduced precision in floating point divide operations once every nine billion random number pairs. Intel said that while almost no one will ever encounter the flaw, the company will nevertheless replace the processor upon request with an updated version that does not have the flaw. This offer will be in effect for the lifetime of a user's PC, which means that users can conclude they do not currently want a replacement, but still have the option of replacing the chip in the future if they wish.

Intel is making a rapid manufacturing transition to the updated version, and expects to be able to ship sufficient replacement parts to meet demand during the next few months.

"The past few weeks have been deeply troubling. What we view as an extremely minor technical problem has taken on a life of its own," said Dr. Andrew S. Grove, president and chief executive officer. "Our OEM customers and the retail channel have been very supportive during this difficult period, and we are very grateful," Dr. Grove said. "To support them and their customers, we are today announcing a no-questions-asked return policy on the current version of the Pentium processor.

"Our previous policy was to talk with users to determine whether their needs required replacement of the processor. To some people, this policy seemed arrogant and uncaring. We apologize. We were motivated by a belief that replacement is simply unnecessary for most people. We still feel that way, but we are changing our policy because we want there to be no doubt that we stand behind this product."

Intel will send a replacement processor to PC users who choose to do the replacement themselves, and will offer telephone technical assistance. Call 1-800-628-8686 for details. Intel also said it planned to contract with service providers to do replacements at no charge for PC owners who prefer to bring their PC's to a service location. Details will be provided in the next few weeks. Finally, Intel said it would work with its OEM customers to provide replacement for PC users who prefer to work with the manufacturer of their system.

The company said it would take an unspecified but material charge against fourth quarter earnings to cover costs associated with the replacement program announced today. Intel said it was unable to determine the amount of the reserve, but said an estimated total will be provided on or before January 17, the date of Intel's 1994 financial results announcement.

Intel also ran advertisements on Dec. 21 in major newspapers across North America. The ad took on the form of a personal letter from Andrew S. Grove, Intel's President & CEO

### **To owners of Pentium processor-based computers and the PC community:**

We at Intel wish to sincerely apologize for our handling of the recently publicized Pentium processor flaw.

The "Intel Inside" symbol means that your computer has a microprocessor second to none in quality and performance. Thousands of Intel employees work very hard to ensure that this is true. But no microprocessor is ever perfect.

What Intel continues to believe is technically an extremely minor problem has taken on a life of its own. Although Intel firmly stands behind the quality of the current version of the Pentium processor, we recognize that many users have concerns. We want to resolve these concerns.

Intel will exchange the current version of the Pentium processor for an updated version, in which this floating-point divide flaw is corrected, for any owner who requests it, free of charge anytime during the life of their computer. Just call 1-800-628-8686.